

PROGRAM facts

Clean Coal Technology
Demonstrations

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U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY



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CCPI CLEAN COAL DEMONSTRATIONS

[www.netl.doe.gov/coal/
ccpi/index.html](http://www.netl.doe.gov/coal/ccpi/index.html)
www.netl.doe.gov/cctc

NETL WEBSITE

www.netl.doe.gov

CLEAN COAL POWER INITIATIVE (CCPI)

"The level of interest expressed in the first competition was tremendous..." (2002)

"The technologies we seek to offer through Round 2 will help make it possible for coal to remain a cornerstone of our domestic energy portfolio, particularly for power generation, and to continue that role into the long-term future." (2004)

Overview

CCPI, initiated by President Bush in 2002, is an innovative technology demonstration program that fosters more efficient clean coal technologies (CCTs) for use in new and existing electric power generating facilities in the United States. Candidate technologies are demonstrated at sufficient scale to ensure proof-of-operation prior to commercialization. Technologies emerging from the program will help to meet new environmental objectives for America embodied in the Clear Skies Initiative, Global Climate Change Initiative (GCC), FutureGen, and the Hydrogen Initiative. Early CCPI demonstrations emphasize technologies applicable to existing power plants and to new plant construction. Later demonstrations are expected to include advanced turbines, membranes, fuel cells, gasification processes, hydrogen production, and other advanced energy system technologies. The CCPI is the capstone of the National Coal RD&D Program managed by the Department of Energy's Office of Fossil Energy.

CCPI, an industry/government cost-shared partnership, responds to the government's commitment to increase investment in CCTs as part of the National Energy Policy (NEP). Cost-shared partnerships leverage public/private investment, enhance teamwork, promote technology transfer, and provide the expertise and funding needed to ensure successful development and deployment of new technologies. Priorities covered by the NEP include increasing the domestic energy supply, protecting the environment, ensuring a comprehensive energy delivery system, and enhancing national energy security. CCPI provides an important platform responding to these priorities.



DOE OFFICE OF FOSSIL ENERGY IS DEMONSTRATING ADVANCED COAL TECHNOLOGIES THAT HELP ACHIEVE ...



CCPI, planned as a multi-year program, is driven by private sector proposed projects in response to government solicitation. Potential applicants include technology developers, service corporations, R&D firms, energy producers, software developers, academia, and other interested parties. Private sector cost-share must be at least 50 percent. Funding is awarded to companies, selected as a result of these open competitions, that can rapidly move promising new concepts to a point where private sector decisions on deployment can be made. CCPI builds upon the advancements made by previous and continuing clean coal research and ensures the ongoing development of advanced systems for commercial power production. The program will help provide the nation with a reliable, affordable, secure, and sustainable energy supply, solving many of the environmental issues associated with coal use, while providing substantial environmental and economic benefits to the nation and the world.

The CCPI Mission is to:

- Create industry/government partnerships that develop promising, initially risky, advanced Clean Coal Technologies.
- Accelerate these new coal energy systems into the market by conducting successful full-scale technology demonstrations.
- Generate substantial economic and environmental benefits to ensure a secure energy future as these technologies are commercialized by industry.

Planning and Management

CCPI is managed by the Department of Energy's (DOE) Office of Fossil Energy (FE) and implemented by the National Energy Technology Laboratory (NETL). To ensure success, stakeholder input is routinely sought through workshops and strategy meetings. These events form an integral part of overall planning providing ample opportunities for stakeholders to communicate with the federal government. Planning input is provided by industry, environmental and state organizations; technology proposers, hosts, and project and technology developers; universities; interested state and federal organizations; and other interested parties.

Program Importance

The government's investment in CCPI recognizes the crucial benefits to our nation's economic stability and security that can be achieved through clean coal research. The program provides opportunity for promising technologies emerging from the FE core R&D – it is a critical strategy for overcoming risk barriers to commercialization. Successful outcomes of the CCPI program will provide an important part of the technology needed to supply our energy needs. Over the last 20 years, our Nation has seen a correlation between economic growth and increasing electricity production. Suc-

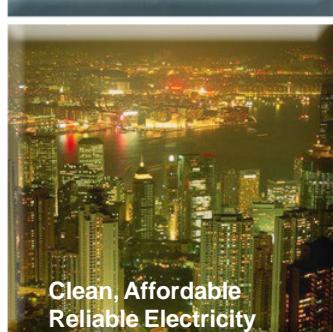
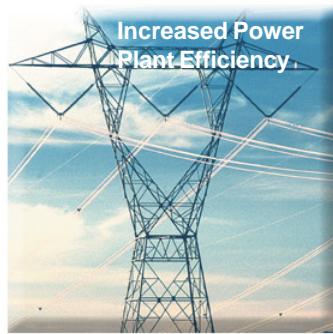
cess of the CCPI program will provide an important part of the technology needed to supply our immediate and long-term energy needs in support of our economic well being, while improving our environment. When the CCPI concept was introduced in 2001/2002, the U.S. power industry was heavily focused on gas-fired generation growth. Nevertheless, coal-fired units were forecast to provide a significant 23 percent of incremental power generation, through 2020. In today's energy forecast, due to evolving perspectives of fuel availability, coal-fired generation is expected to play an even greater role in the Nation's incremental power generation through 2025. This substantial increase in reliance on coal can only be achieved through longer and more efficient operation of existing coal-fired plants, incorporating new CCTs in ongoing operations, and adding new clean-coal plant capacity. Today, CCT development programs are providing a valuable option to permit increasing use of our most abundant, indigenous energy source to meet the Nation's electricity and economic growth demands in an environmentally acceptable manner while reducing reliance on energy imports. By demonstrating the latest technology to improve efficiency and low-cost, high-performance emissions controls, CCPI technologies can help us all to achieve a more secure energy future.

Program Direction

CCPI fits within FE's Office of Clean Coals strategic direction for fostering economic growth while protecting the environment, and supports efficient and sustainable use of domestic energy resources. The program is closely linked with RD&D activities being conducted throughout the core R&D elements of the President's Coal Research Initiative that are driving towards ultra-clean fossil-fuel-based energy complexes in the 21st century. FE's Clean Coal Technology Roadmap, developed cooperatively with the coal and power industry, addresses short- and long-term needs. When integrated with other DOE initiatives, CCPI will help the nation successfully commercialize technologies that will attain near-zero emissions, produce clean fuels, and have CO₂ management capabilities. The President's GCCI commits the U.S. to reduce greenhouse gas (GHG) intensity (the ratio of greenhouse emissions to economic output) by 18 percent over the next decade. Improving power plant efficiency is a potentially significant way of reducing carbon emissions in the near and mid-term. CCPI technologies offer a pathway for reducing the GHG intensity of our economy.

Program Implementation

CCPI is being implemented via successive solicitations (rounds) that target priority areas of interest to meet DOE's Roadmap goals. Each solicitation application selection process is expected to be conducted on a two-year cycle. Demonstrations selected under these solicitations must address needs not met by the private sector, promote technologies that have not been proven commercially, have fleet applicability, and provide substantial public benefit. Demonstrations must "raise the technology bar" over existing technologies



CCPI ROUND 1 PARTICIPANT CONTACTS

Great River Energy

Increasing Power Plant Efficiency—
Lignite Fuel Enhancement
Charles Bullinger
701-442-7001

NeuCo, Inc.

Demonstration of Integrated Optimization Software at the Baldwin Energy Complex
Peter Spinney
617-425-3378

University of Kentucky Research Foundation

Advanced Multi-Product Coal Utilization By-Product Processing Plant
Dr. Thomas L. Robl
859-257-0272

Waste Management and Processors Inc. (WMPI PTY., LLC)

Gilberton Coal-to-Clean Fuels and Power Project
Robert Hoppe
570-874-1602

Western Greenbrier Co-Generation, LLC

Western Greenbrier Co-Production Demonstration Project
Wayne Brown
304-645-5419

Wisconsin Electric Power Company

TOXECON Retrofit for Mercury and Multi-Pollutant Control on Three 90 MW Coal-Fired Boilers
Richard Johnson
414-221-4234

For project details and benefits, visit

www.netl.doe.gov/coal/ccpi/index.html

For other Coal Power Program information, visit

Office of Fossil Energy
www.fe.doe.gov/

Strategic Center for Coal

www.netl.doe.gov/coal/index.html

CLEAN COAL POWER INITIATIVE (CCPI)

in terms of efficiency, environmental performance, and cost to ensure that significant advances are achieved. The solicitation and project selections for Round 1 were completed in January 2003. The Round 2 solicitation was released in February 2004 and thirteen proposals were submitted to DOE. Selected Round 2 projects, when successfully completed and commercialized, will play an enabling role in the development of technologies to ensure future availability of clean, affordable domestic electricity and hydrogen. More complete project descriptions and status can be found on the CCPI website (below).

Benefits

CCPI program benefits, when compared to RD&D investment costs, are expected to be substantial. The program, by merging public and private sector interests, will benefit the environment, enhance electricity reliability, bolster energy security, and help to ensure an affordable supply of electricity. Successful completion of this initiative will lead to a stronger, more robust domestic economy. The outcome of the program will be new and innovative technologies that are readily accepted by industry and regulators and produce substantial public benefits. These include reduced fuel costs due to higher plant efficiencies, lower capital costs for repowered facilities and new plants, reduced costs of environmental compliance, avoided environmental costs (e.g., health, infrastructure, agriculture), enhanced industrial competitiveness leading to increased domestic sales and technology exports, creation of high-quality jobs, and technology spin-offs. Project specific benefits analysis can be found on the CCPI website.

